

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



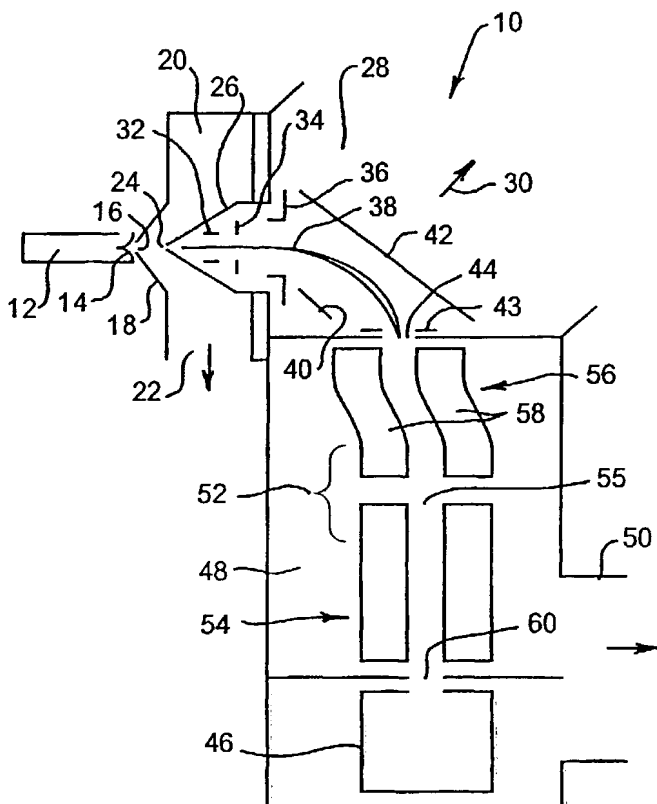
(43) International Publication Date
29 November 2001 (29.11.2001)

PCT

(10) International Publication Number
WO 01/91159 A1

- (51) International Patent Classification⁷: **H01J 49/42** (74) Agent: **PHILLIPS ORMONDE & FITZPATRICK**; 367 Collins Street, Melbourne, Victoria 3000 (AU).
- (21) International Application Number: **PCT/AU01/01024**
- (22) International Filing Date: 17 August 2001 (17.08.2001)
- (25) Filing Language: English (81) Designated States (*national*): AU, CA, JP, US.
- (26) Publication Language: English (84) Designated States (*regional*): European patent (DE, FR, GB).
- (30) Priority Data:
PR 4651 27 April 2001 (27.04.2001) AU
- (71) Applicant (for all designated States except US): **VARIAN AUSTRALIA PTY LTD** [AU/AU]; 679 Springvale Road, Mulgrave, Victoria 3170 (AU).
- (71) Applicant and
(72) Inventor: **KALINITCHENKO, Iouri** [AU/AU]; 5 Halifax Street, Mulgrave, Victoria 3170 (AU).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
— upon request of the applicant, before the expiration of the time limit referred to in Article 21(2)(a)
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MASS SPECTROMETER INCLUDING A QUADRUPOLE MASS ANALYSER ARRANGEMENT



(57) Abstract: A mass spectrometer (10) having an ion optics system (32, 34, 36, 40, 42) in a first vacuum chamber (28) which diverts ions travelling in a first direction from a source (12, 16, 24) through an angle such that neutral particles and photons from the source continue in the first direction and are removed. The diverted ion beam (38) is then directed into a quadrupole mass analyser arrangement (52) in a second vacuum chamber (48) which comprises a configured, for example curved, set of fringe electrodes (56) followed by a linear mass analyser (54) and then an ion detector (46). The configured fringe electrodes (56) again divert the ions prior to their passage into the linear quadrupole mass analyser (54) whereby additional neutral particles possibly created by passage of the ion beam through residual gas in the vacuum chambers (28, 48) are shielded from entering the linear mass analyser (54). The use of the configured set of fringe electrodes (56) in front of the linear mass analyser (54) has been found to substantially reduce background count rates, particularly for detection of isotopes of low atomic masses.

WO 01/91159 A1